CLAIMS

What is claimed is:

1.   A method of adjusting initial CMY data values comprising:

determining a relative amount of chroma in the initial CMY data values; and

producing color saturation adjusted CMY data values as a function of the relative amount of chroma in the initial CMY data values.

2.   The method of claim 1 wherein the initial CMY data values comprise gray balanced CMY data values.

3.   The method of claim 1 wherein the initial CMY data values comprise non-gray balanced CMY data values.

4.   The method of claim 1 further including gray balance adjusting the color saturation adjusted CMY data values.

5.   The method of claim 1 wherein determining a relative amount of chroma comprises calculating (1 – RATIO) wherein RATIO is a ratio between a minimum of the initial CMY data values and a maximum of the initial CMY data values.

6.   The method of claim 1 wherein producing color saturation adjusted CMY data values comprises producing color saturation adjusted CMY data values using:

$$C = C + (SAT\_C(C) - C)^*(1\text{-RATIO})$$
$$M = M + (SAT\_M(M) - M)^*(1\text{-RATIO})$$
$$Y = Y + (SAT\_Y(Y) - Y)^*(1\text{-RATIO})$$

wherein SAT_C(C), SAT_M(M), and SAT_Y(Y) are maximum color saturation adjusted values, and RATIO is a ratio between a minimum of the initial CMY data values and a maximum of the initial CMY data values.

7.   A method of adjusting initial primary color data values, comprising:

determining a relative amount of chroma in the initial primary data values; and

producing color saturation adjusted primary data values as a function of the relative amount of chroma in the initial primary color data values.

8.   The method of claim 7 wherein the initial primary color data values comprise gray balanced primary color data values.

9.   The method of claim 7 wherein the initial primary color data values comprise non-gray balanced primary color data values.

10.   The method of claim 7 further including gray balance adjusting the color saturation adjusted primary color data values.

11. The method of claim 7 wherein determining a relative amount of chroma comprises calculating (1 – RATIO) wherein RATIO is a ratio between a minimum of the initial primary color data values and a maximum of the initial primary color data values.

12. The method of claim 7 wherein producing color saturation adjusted primary color data comprises:

for each of the initial primary color data values, producing a color saturation adjusted primary color data value by adding to the initial primary color data value a product of (1) a difference between a maximum saturation adjusted value for the primary color data value and the original primary color data value, and (2) one minus a ratio between a minimum of the initial primary color data values and a maximum of the initial primary color data values.

13. A method of adjusting initial primary color data values, comprising:

determining whether the initial primary color data values are all zero;

determining whether the initial primary color data values are equal; and

producing color saturation adjusted primary color data values if the initial primary color data values are not all zero and if the initial primary color data values are not equal.

14. The method of claim 13 wherein the initial primary color data values comprise non-gray balanced primary color data values.

15. The method of claim 13 wherein the initial primary color data values comprise gray balanced primary color data values.

16. The method of claim 13 further including gray balance adjusting the color saturation adjusted primary color data values.

17. The method of claim 13 wherein producing color saturation adjusted primary color data comprises:

for each of the initial primary color data values, producing a color saturation adjusted primary color data value by adding to the initial primary color data value a product of (1) a difference between a maximum saturation adjusted value for the primary color data value and the original primary color data value, and (2) one minus a ratio between a minimum of the initial primary color data values and a maximum of the initial primary color data values.

18. A method of adjusting initial primary color data values, comprising:

determining a relative amount of gray in the initial primary color data values;

determining a relative amount of chroma in the initial primary color data values;

for each of the initial primary color data values, adding a portion of the initial data value and a portion of a corresponding maximum color saturation adjusted value to produce respective color saturation adjusted primary color data values; and

wherein the portion of the initial data value is a function of the relative amount of gray and the portion of the maximum saturation adjusted value is a function of the relative amount of chroma.

19. The method of claim 18 wherein the initial primary color data values comprise non-gray balanced primary color data values.

20.   The method of claim 18 wherein the initial primary color data values comprise gray balanced primary color data values.

21.   The method of claim 18 wherein determining a relative amount of gray comprises calculating a ratio between a minimum of the initial primary color data values and a maximum of the initial primary color data values.

22.   The method of claim 18 wherein determining a relative amount of chroma comprises calculating (1 – RATIO) wherein RATIO is a ratio between a minimum of the initial primary color data values and a maximum of the initial primary color data values.

23.   The method of claim 18 wherein:

determining a relative amount of gray comprises determining a relative amount of gray using:

RATIO = MIN(C, M, Y)/MAX(C, M, Y)

wherein MIN(C, M, Y) is a minimum of the initial CMY data values and MAX(C, M, Y) is a maximum of the initial CMY data values;

determining a relative amount of chroma comprises calculating (1 – RATIO); and

adding a portion of the initial data value and a portion of a corresponding maximum color saturation adjusted value to produce respective color saturation adjusted primary color data values comprises:

C = C*RATIO + SAT_C(C)*(1-RATIO)

M = M*RATIO + SAT_M(M)*(1-RATIO)

Y = Y*RATIO + SAT_Y(Y)*(1-RATIO)

wherein SAT_C(C), SAT_M(M), and SAT_Y(Y) are maximum color saturation adjusted values.